

## HEART DISEASE AND WOMEN:

*Reducing High  
Blood Cholesterol*

Heart disease is a woman's concern. Every woman's concern. One in ten American women 45 to 64 years of age has some form of heart disease, and this increases to one in four women over 65. Overall, about 9 million American women of all ages suffer from heart disease. Another 2 million women have had a stroke. Both heart disease and stroke are known as cardiovascular diseases, which include serious disorders of the heart and blood vessel system.

High blood cholesterol is a condition that greatly increases your chances of developing coronary heart disease, the main form of heart disease. That is because extra cholesterol in the blood collects in the inner walls of the arteries, allowing less blood to get to the heart.

Today, about one-quarter of American women have blood cholesterol levels high enough to pose a serious risk for heart disease. Blood cholesterol among women tends to rise from the age of 20 onward, but goes up sharply beginning at about age 40. It continues to increase until about age 60. More than half of women over age 55 need to lower their blood cholesterol.

**TYPES OF CHOLESTEROL**

Cholesterol travels in the blood in packages called lipoproteins. Cholesterol packaged in low-density lipoprotein (LDL) is often called "bad" cholesterol, because too much LDL in blood can lead to cholesterol buildup and blockage in the arteries.

Another type of cholesterol, which is packaged in high-density lipoprotein (HDL), is known as "good" cholesterol. That is because HDL helps remove cholesterol from the blood, preventing it from piling up in the arteries. The higher your HDL, the less your risk of coronary heart disease.

**HEART DISEASE RISK FACTORS**

Risk factors are habits or traits that make a person more likely to develop a disease. Many of those for heart disease can be controlled. These include:

- Cigarette smoking
- High blood pressure
- High blood cholesterol (high total cholesterol and high LDL cholesterol)
- Low HDL cholesterol
- Overweight
- Physical inactivity
- Diabetes

The more risk factors you have, the greater your risk. So take action—take control!



## WHAT'S YOUR NUMBER?

### BLOOD CHOLESTEROL LEVELS AND HEART DISEASE RISK FOR WOMEN WITHOUT CORONARY HEART DISEASE

	DESIRABLE	BORDERLINE-HIGH	HIGH
<b>Total cholesterol</b>	Less than 200 mg/dL	200-239 mg/dL	240 mg/dL and above
<b>LDL-cholesterol</b>	Less than 130 mg/dL	130-159 mg/dL	160 mg/dL and above

An **HDL-cholesterol** level of less than 35 mg/dL is a major risk factor for coronary heart disease. An HDL level of 60 mg/dL or higher is protective.

Source: *Second Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol In Adults*, NIH, NHLBI, 1993.

## MANAGING CHOLESTEROL LEVELS

All women over the age of 20 should have their blood cholesterol checked. The following sections describe the steps for managing cholesterol levels for two types of women: those who do not have coronary heart disease and those who do have coronary heart disease.

### If You Do Not Have Coronary Heart Disease

#### *Getting Your Cholesterol Checked.*

Blood cholesterol levels are measured by means of a small blood sample. The blood should be tested for total cholesterol and, if an accurate measurement is available, for HDL-cholesterol as well.

#### *Understanding the Numbers.*

A desirable total cholesterol level for adults without coronary heart disease is less than 200 mg/dL (milligrams of cholesterol per deciliter of blood). A level of 240 mg/dL or above is considered "high" blood cholesterol. But even levels in the "borderline-high"

category (200-239 mg/dL) increase the risk of heart disease

HDL levels are interpreted differently than total cholesterol levels. The lower your HDL level, the higher your heart disease risk. An HDL level of under 35mg/dL is a major risk factor for heart disease. A level of 60 mg/dL or higher is considered protective.

Total and HDL-cholesterol are measured first. If these tests show any of the following, your doctor will want to measure your LDL level as well:

- Total cholesterol 240 mg/dL or above
- Total cholesterol 200-239 mg/dL with two or more other non-cholesterol risk factors for heart disease—these are smoking, high blood pressure, overweight, physical inactivity, diabetes, age (55 years or older for women), and a family history of early heart disease (a father or brother stricken before age 55, or a mother or sister before age 65)

- HDL-cholesterol less than 35 mg/dL

LDL is measured with a blood test called a lipoprotein profile, which also gives the level of triglycerides, another fatty substance.

An LDL level below 130 mg/dL is desirable. LDL levels of 130-159 mg/dL are borderline-high. Levels of 160 mg/dL or above are high. As with total cholesterol, the higher your LDL number, the higher the risk.

**Prevention and Treatment.** If your tests show that your blood cholesterol levels are in the desirable range, keep up the good work! To help keep your levels healthy, it will be important to eat a low saturated fat, low cholesterol diet, engage in regular physical activity, and control your weight.

If your blood cholesterol levels are too high, your doctor may recommend a specific treatment program for you. For most people, cutting back on foods high in saturated fat and cholesterol will lower LDL-cholesterol, which is the main goal of treatment. Regular physical activity and weight loss for overweight persons also will lower blood cholesterol levels.

Losing extra weight, as well as quitting smoking and becoming more physically active, also may help boost your HDL-cholesterol levels. (For more specific information on lifestyle changes that can help improve cholesterol levels, see the section on "Lowering Your Blood Cholesterol.")

If your new diet and other lifestyle changes do not lower your blood cholesterol level enough, your

doctor may suggest that you take cholesterol-lowering medications. If you have other risk factors for coronary heart disease, you will need to lower your cholesterol more than someone without risk factors.

### **If You Have Coronary Heart Disease**

Women who have coronary heart disease should pay even more attention to their cholesterol levels. An individual with coronary heart disease has a much greater risk of having a future heart attack than a person without heart disease. Whether or not your cholesterol level is elevated, lowering it will greatly reduce your risk of a future heart attack and can actually prolong your life.

#### ***Getting Your Cholesterol Checked.***

Since you have coronary heart disease, you will need to start with a lipoprotein profile to determine not only your total cholesterol and HDL-cholesterol levels, but also your levels of LDL-cholesterol and triglycerides.

***Understanding the Numbers.*** Your goal should be to have an LDL-cholesterol level of about 100 mg/dL or less, which is lower than for people who do not have coronary heart disease. Depending on what your LDL level is, your next steps will be the following:

- If your LDL level is 100 mg/dL or less, you do not need to take specific steps to lower your LDL. But you will need to have your level tested again in 1 year. In the meantime, you should follow a diet low in saturated fat and cholesterol, maintain a healthy

### **HEALTHY HEART RECIPES**

Need ideas for creating tasty, nutritious, low fat meals? For free recipes, write to the NHLBI Information Center, P.O. Box 30105, Bethesda, MD 20824-0105.

weight, be physically active, and not smoke. You should also follow the specific recommendations of your doctor.

- If your LDL level is higher than 100 mg/dL, you will need a complete physical examination to find out if you have a disease or condition that is raising your cholesterol levels. Then, you should take steps to lower your LDL to 100 mg/dL or less: closely follow a low saturated fat, low cholesterol diet, be physically active, lose excess weight, and take cholesterol-lowering medicine, if it's prescribed. Of course, you also should avoid smoking.

If, in your doctor's judgment, your LDL level starts out too far above the LDL goal of 100 mg/dL, or if your LDL level stays too high after lifestyle changes, you will need to take medicine.

### **LOWERING YOUR BLOOD CHOLESTEROL**

As noted above, most people can lower their blood cholesterol by changing their diet, increasing physical activity, and losing excess weight. But what specific steps are involved?

### **Changing Your Eating Habits**

To lower your blood cholesterol through diet, eat fewer foods high in saturated fat, total fat, and cholesterol.

If you do not have a cholesterol problem that needs a doctor's attention, the recommended eating pattern is:

- Less than 10 percent of the day's total calories from saturated fat
- 30 percent or less of the day's total calories from fat
- Less than 300 milligrams of dietary cholesterol per day

If you have high blood cholesterol, your doctor will first prescribe a diet similar to the one above, but with special emphasis on limiting calories from saturated fat to 8-10 percent of the day's calories. If you follow this "Step I" eating pattern for about 3 months and your blood cholesterol does not drop enough, you may need to cut back still more on saturated fat and cholesterol and follow the "Step II" eating pattern. This calls for:

- Less than 7 percent of the day's total calories from saturated fat
- 30 percent or less of the day's total calories from fat
- Less than 200 milligrams of dietary cholesterol per day

If you have coronary heart disease, you should follow the Step II diet right from the start. It is a good idea to get help from a registered dietitian or other qualified nutritionist when starting the Step II diet.

## FAT FINDING

Now, let's get practical. Which fats are found in which foods?

**Saturated fat** is found mainly in foods that come from animals. Whole milk dairy products, such as butter, cheese, milk, cream, and ice cream, contain high amounts of saturated fat. The fat in meat and poultry skin also is loaded with saturated fat. A few vegetable fats—coconut oil, cocoa butter, palm kernel oil, and palm oil—are also high in saturated fat.

**Remember: Saturated fat boosts your blood cholesterol level more than anything else in your diet.** Eating less saturated fat is the best way to lower your blood cholesterol level.

**Unsaturated fat** does not raise blood cholesterol levels. But, like all fats, it provides 9 calories per gram and so can lead to overweight.

One type of unsaturated fat is polyunsaturated fat, which is found in many cooking and salad oils, and in some margarines. Another type is monounsaturated fat, which is found in olive, canola, and peanut oils.

**Cholesterol** is found only in foods that come from animals. Eating less cholesterol will help lower blood cholesterol levels in most people.

## THE HEALTHY DIET: BACK TO BASICS

Each day, choose different foods that you enjoy eating from these food groups:

FOOD GROUP/DAILY SERVINGS	WHAT COUNTS AS A SERVING*
<b>BREADS, CEREALS, RICE, AND PASTA</b> 6-11 servings	■ 1 slice bread ■ 1/2 bun or bagel ■ 1 ounce dry cereal ■ 1/2 cup cooked cereal, rice, pasta
<b>VEGETABLES</b> 3-5 servings	■ 1 cup raw leafy greens ■ 1/2 cup other vegetables ■ 3/4 cup vegetable juice
<b>FRUITS</b> 2-4 servings	■ 1 medium apple, banana, orange ■ 1/2 cup fruit—fresh, cooked, canned ■ 3/4 cup juice
<b>MILK, YOGURT, AND CHEESE</b> 2-3 servings	■ 1 cup milk (skim or low fat) ■ 8 ounces low fat yogurt ■ 1 1/2 ounces low fat natural cheese ■ 2 ounces low fat processed cheese
<b>MEAT, POULTRY, FISH, DRY BEANS AND PEAS, EGGS, NUTS, AND SEEDS</b> 2-3 servings	■ This totals up to 6 ounces of cooked lean meat, poultry, or fish per day ■ Count 1/2 cup cooked dry beans, or 2 Tbsp peanut butter, or 1/3 cup of nuts as 1 ounce of meat ■ Limit egg yolks and organ meats
<b>FATS, OILS, AND SWEETS</b>	■ Use sparingly

\* These serving sizes may differ from those on the Nutrition Facts labels on packaged foods.

Source: *Dietary Guidelines of Americans*, U.S. Department of Agriculture/U.S. Department of Health and Human Services, 1995.

## FIGURING OUT FAT

Your personal “fat allowance” depends on how many calories you take in each day. If you do not have a cholesterol problem and have no coronary heart disease, you can use the general diet in the chart below—saturated fat should be less than 10 percent of daily calories and total fat no more than 30 percent. If you have an elevated cholesterol level that needs to be lowered with a specific treatment program but you don’t have coronary heart disease, you should begin with the Step I diet—saturated fat should be 8-10 percent of daily calories and total fat no more than 30 percent. If you have heart disease, you should go right to the Step II diet—saturated fat should be less than 7 percent of daily calories and total fat no more than 30 percent. Step II is also for those who do not get enough cholesterol lowering from Step I.

The chart shows examples of upper limits on saturated fat and total fat grams, depending on how many calories you consume each day. For the three diets, the grams of total fat are the same for the various calorie levels, but the saturated fat grams change. Check food product labels to find out the number of fat grams (saturated and total) in each serving.

	GENERAL DIET	STEP I DIET: ELEVATED CHOLESTEROL/ NO HEART DISEASE	STEP II DIET: HEART DISEASE	ALL 3 DIETS
<i>Total Calories Per Day</i>	<i>Saturated Fat<sup>a</sup> (in grams)</i>	<i>Saturated Fat<sup>b</sup> (in grams)</i>	<i>Saturated Fat<sup>c</sup> (in grams)</i>	<i>Total Fat<sup>d</sup> (in grams)</i>
1,200	13 or less	12 or less	8 or less	40 or less
1,500	16 or less	15 or less	10 or less	50 or less
1,800	19 or less	18 or less	12 or less	60 or less
2,000	22 or less	20 or less	13 or less	65 or less
2,500	27 or less	25 or less	16 or less	80 or less

<sup>a</sup> Amounts are equal to just under 10 percent of total calories

<sup>b</sup> Amounts are equal to 9 percent of total calories

<sup>c</sup> Amounts are equal to 6 percent of total calories

<sup>d</sup> Amounts are equal to 30 percent of total calories (rounded down to the nearest 5)

## Now You're Cooking

Planning and cooking meals aimed at reducing blood cholesterol does not have to be complicated. Here are some suggestions:

- Choose fish, poultry, and lean cuts of meat, and remove the fat and skin before eating. You can eat up to 6 ounces per day.
- Cut down on sausage, bacon, and processed high-fat cold cuts.
- Limit organ meats, such as liver, kidney, or brains.
- Instead of whole milk or cream, drink skim or 1 percent milk. Try nonfat or low fat yogurt and cheeses.
- Instead of butter, use tub or liquid margarine or liquid vegetable oils high in poly- and monosaturated fats. The softer the margarine, the more unsaturated it is. Softer margarines are also less likely to contain "trans" fats, which appear to raise blood cholesterol but not as much as saturated fat (see box above). Use all fats and oils sparingly.
- Eat egg yolks only in moderation. Egg whites contain no fat or cholesterol and can be eaten often. In most recipes, substitute two egg whites for one whole egg.
- Eat plenty of fruits and vegetables, as well as cereals, breads, rice, and pasta made from whole grains (for example, rye bread or whole wheat spaghetti).
- Broil, bake, roast, or poach foods, rather than fry them.

### A WORD ABOUT MARGARINE

You may have heard that margarine has a type of unsaturated fat called "trans" fat. "Trans" fats appear to raise blood cholesterol more than other unsaturated fats, but not as much as saturated fats. "Trans" fats are formed when vegetable oil is hardened to become margarine or shortening through a process called "hydrogenation." The harder the margarine or shortening, the more hydrogenated or saturated it is and the more "trans" fat it has. So buy soft or liquid margarine for spreading or cooking. Also, choose those containing liquid vegetable oil as the first ingredient.

- Liquid vegetable oils are a good choice for sauteing vegetables, browning potatoes, popping corn, and for making baked goods, and pancakes and waffles.
- Many store-bought packaged foods are high in saturated fats. Read product labels and choose products that are lowest in saturated fat, total fat, and cholesterol. Baked goods have been developed that contain very little saturated fat and no cholesterol. But keep in mind that they still may be high in calories.
- As you plan your meals, remember to create a balanced diet that includes foods from the following basic food groups: breads, cereals, rice, and pasta (6-11 servings daily); vegetables (3-5 servings daily); fruits (2-4 servings daily); milk, yogurt, and cheese (2-3 servings daily); and meat, poultry, fish, dry beans and peas, eggs, nuts, and seeds (2-3 servings daily). Use fats, oils, and sweets sparingly.

### EATING SMART AWAY FROM HOME

Following a heart-healthy diet is a bit more challenging when you're away from home, but there are many ways to eat right when eating out. Choose restaurants that have low fat, low-cholesterol menu choices, and ask that gravy, butter, and rich sauces be served on the side. At salad bars, load up on vegetables and limit foods such as eggs, bacon, and cheese. Go easy on the salad dressing, and choose low-calorie types when they are offered.

Even at fast-food restaurants, you can make healthy choices. Choose grilled (not fried or breaded) chicken sandwiches, regular-sized hamburgers, or roast beef sandwiches. When ordering pizza, ask for vegetable toppings, such as green pepper and mushrooms, instead of meat toppings and extra cheese.

## HEALTHY SNACKING

Many snacks, including many types of cookies, crackers, and chips, are high in saturated fat, cholesterol, and calories. Eat them occasionally, if at all. Instead, keep the following low fat treats on hand for snack attacks:

- Frozen grapes or banana slices; other fresh fruits
- Dried fruit
- Bagels and bread sticks\*
- Unsweetened, ready-to-eat cereals\*
- No-oil baked tortilla chips\*
- Fat free or low fat cookies, such as animal crackers, fruit bars, ginger snaps, and vanilla or lemon wafers
- Fat free or low fat crackers\*, such as melba toast, rice, rye, graham, and soda crackers
- Fat free pretzels or air-popped popcorn\*

Keep in mind that while these treats may be low in fat, many are not low in calories. So watch how much you eat, especially if you are trying to control your weight.

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*\* If you are watching your sodium intake, be sure to look for low-sodium or unsalted types.*

## GETTING PHYSICAL

Regular physical activity can help you lower LDL cholesterol and raise HDL cholesterol levels. Even moderate-intensity activity can provide benefits, if done for 30 minutes on most—and preferably all—days of the week. Examples of such activity are brisk walking or bicycling, raking leaves, or gardening. If you already engage in this level of activity, you can get added benefits by doing even more.

Regardless of the type of activity you choose, be sure to build up your activity level gradually over a period of several weeks. Also, check with your doctor first if you have any health problems or if you are over 50 and are not used to energetic activity.

## LOSING EXCESS WEIGHT

If you are overweight, losing weight also can help to lower high blood cholesterol, especially LDL cholesterol, and also may help boost HDL levels. Choose a wide variety of low-calorie, nutritious foods in moderate amounts from the basic food groups and increase your level of physical activity.

If you have a lot of weight to lose, ask your doctor or a qualified nutritionist to help you develop a sensible, well-balanced plan for gradual weight loss. Avoid fad diets and diet pills, because most cause troublesome side effects and none of them work for long-term weight loss.

## MEDICATION

As noted earlier, if you make changes in your diet and lifestyle and your LDL-cholesterol level still remains quite high, your doctor may also suggest that you take cholesterol-lowering medications.

However, if you have not yet gone through menopause, you should not be prescribed cholesterol-lowering drugs unless your cholesterol level is extremely high, you have heart disease or other risk factors for heart disease, or you have a strong family history of early heart disease. If you have gone through menopause, your doctor may prescribe a hormone medicine to help lower your cholesterol levels before recommending a cholesterol-lowering drug.

If your doctor does prescribe medicines, you must also continue your cholesterol-lowering diet for the following reasons: First, diet lowers your risk for heart disease in ways other than just lowering cholesterol. Second, the combination of diet and medication may allow you to take less medicine. If you have coronary heart disease, you are more likely to need a cholesterol-lowering drug than someone who doesn't have heart disease. This is because, if you have coronary heart disease, your goal cholesterol level is lower. In fact, your doctor may prescribe medication right from the start of treatment to get enough of a reduction in your LDL-cholesterol. If you do not have coronary heart disease, you should try to lower your cholesterol levels with diet and other lifestyle changes before adding medication.

## FOR MORE INFORMATION

If you want to know more about keeping your heart healthy, the National Heart, Lung, and Blood Institute (NHLBI) has available free fact sheets on the following subjects: the heart benefits of physical activity, preventing and controlling high blood pressure, quitting smoking, and heart disease risk factors for women.

### Contact:

NHLBI Information Center  
P.O. Box 30105  
Bethesda, MD 20824-0105  
(301) 251-1222

Or check out the NHLBI web site, which is at  
<http://www.nhlbi.nih.gov>.

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